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Environmental Standards for Alberta's Livestock Industry

Revised March 2007

Agdex 096-3

Manure Management Record Keeping Regulations

“The purpose of AOPA is to ensure that the province's livestock industry can grow to meet the opportunities presented by local and world markets in an environmentally sustainable manner.”

The *Agricultural Operation Practices Act* (AOPA) sets out manure management standards for all agricultural operations in Alberta. Under AOPA, confined feeding operations (CFOs) and anyone who handles 500 tonnes or more per year of manure must keep records for a minimum of five years.

The following types of activities require record keeping:

- manure production
- manure transfer
- manure application

Terms used in this publication have been simplified to make it easier to read. Complete definitions are found in Section 1 of the legislation. For example: the term **manure*** in this document includes the livestock excreta, straw, other bedding material, litter, soil, wash water and feed in the manure. Composted manure has the same requirements as manure.

Some of the records required include soil test results, amount of manure produced or handled, the name and address of a person who receives or applies manure and the applicable dates as well as the application rates of manure and fertilizer. **Record keeping and soil testing are not required for anyone who handles less than 500 tonnes of manure per year.**

However, everyone must comply with the various manure application and short-term solid manure storage setback distances. Manure must also

be applied or handled according to the soil nitrogen and salinity limits specified in the regulations or according to a nutrient management plan or a manure handling plan that has been approved by the Natural Resources Conservation Board (NRCB).

For more information, please refer to the contacts listed at the end of this publication.

Records required for CFOs

A CFO owner or operator must keep the following records:

- volume or weight of manure produced
- name and mailing address, or legal land description, of a person to whom control of a total of 500 tonnes or more of manure is transferred in a year
- date of the transfer of manure
- volume or weight of manure transferred

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The following table is an example of how a person might keep records required for a CFO.

CFO Manure Production Record* (Standards and Administration Regulation, Section 28 (2))			Name: ABC Feeders
Operating Unit: Feedlot	Address: Box 99, Anywhere, AB	Legal Land Description: SE 6-18-22-W6	Year: 2005
Type of Livestock: Beef Finishers	Number of Livestock: 7,000	Manure Production per Animal: 2.16 tonnes/year	Total Volume/Weight: 15,120 tonnes
Est. Total Nitrogen per Ton: 10 kg/tonne	Est. Crop N per Ton: 2.6 kg/tonne		
Record of Manure or Compost Transfers			
Date:	Name:	Address:	Manure Volume/Weight:
April 18-21, 2005	Self	SW 6-18-22-W6	4,900 tonnes
Sept. 21-26, 2005	J. Smith	NW 18-18-22-W6	5,080 tonnes

***Note:** Table information in **bold** lettering means it is required by AOPA. Information that is not bolded is not required, but is included to add clarity, especially for operations with more than one type of livestock.

Records required for manure transfers by manure applicators or haulers

Each person who transfers control, receives, or removes 500 tonnes or more per year of manure must keep records of the following:

- name and address of the person from whom manure is transferred, received or removed
- date the manure is transferred, received or removed

- volume or weight of manure that has been transferred, received or removed

The record keeping requirements of this section also apply to custom manure applicators, producers who spread manure on their own land and anyone who receives more than 500 tonnes per year of manure.

The following table is an example of how a manure applicator or hauler might record the required information.

Manure Transfer Record Form (Standards and Administration Regulation, Section 28 (3), (4))			
Date: Sept. 21-26, 2005		Type of manure: Solid manure	
	Transferred from:	Removed by:	Received by:
Name	ABC Feeders	XY Corral Cleaners	J. Smith
Address	Box 99, Anywhere, AB	Box 33, Where, AB	Box 52, Here, AB
Volume/Weight	5,080 tonnes	5,080 tonnes	5,080 tonnes

Records required for manure application

Under AOPA, a person who applies a total of 500 tonnes or more of manure in a year to land under the person's control (usually the owner or renter) must keep the following records:

- name and address of the person from whom manure is received
- date the manure is received
- volume or weight of manure received
- legal land description of the land to which manure is applied

- area of the land to which manure is applied
- date the manure is applied
- volume or weight of manure applied
- application rates of manure nutrients and fertilizer by field and year
- dates of application and incorporation and the methods used for each field
- soil test results (see next section for details)

Note: AOPA record-keeping requirements do not apply to grazing livestock. However, all livestock operations are subject to the standards for manure collection, as well as manure application and storage setback distances from neighbours and common bodies of water.

Soil testing and analysis

No soil testing is required for persons who handle less than 500 tonnes of manure per year. A person who applies a total of 500 tonnes or more of manure in a year must conduct soil tests at least once every three years on each field before applying manure or compost. If a person applies manure more than once every three years to a field, he or she must still stay within the specified limits in the regulations for soil nitrate-nitrogen and salinity.

Test once every three years for the following:

- extractable nitrate-nitrogen ($\text{NO}_3\text{-N}$) from a soil depth of 0 to 60 centimetres (cm)
- soil salinity based on electrical conductivity (E.C.) from a soil depth of 0 to 15 cm

Test once only for the following:

- soil texture, from a soil depth of 0 to 15 cm and 15 to 30 cm

Soil nitrate-nitrogen and salinity limits

The regulation sets soil nutrient and salinity limits for manure application. It should be noted that these limits can only be exceeded if a producer has a nutrient management plan that has been approved by the NRCB.

In various soil groups and with different farming methods, manure application will result in differing nitrate-nitrogen levels. The following table specifies the nitrate-nitrogen levels that are not to be exceeded in the top 60 cm of soil after manure application.

Nitrate-nitrogen limits in soil

(Standards and Administration Regulation, Schedule 3, Table 3)

Farming method	Soil group	Sandy (>45% sand and water table <4 m)	Sandy (>45% sand and water table >4 m)	Medium and fine textured soils
Dryland	Brown	80 kg/ha (75 lb/ac)	110 kg/ha (100 lb/ac)	140 kg/ha (125 lb/ac)
	Dark Brown	110 kg/ha (100 lb/ac)	140 kg/ha (125 lb/ac)	170 kg/ha (150 lb/ac)
	Black	140 kg/ha (125 lb/ac)	170 kg/ha (150 lb/ac)	225 kg/ha (200 lb/ac)
	Grey Wooded	110 kg/ha (100 lb/ac)	140 kg/ha (125 lb/ac)	170 kg/ha (150 lb/ac)
Irrigated	All groups	180 kg/ha (160 lb/ac)	225 kg/ha (200 lb/ac)	270 kg/ha (240 lb/ac)

Note: To convert kg/ha into lbs/ac, divide the kg/ha by 1.1 (eg. 110 kg/ha / 1.1 = 100 lbs/ac)

To ensure that the salts in manure do not affect plant growth, the regulations specify that manure must not be applied to soils that have an electrical conductivity (salinity) greater than 4 deciSiemen per metre (dS/m) from the top 0 cm to 15 cm of the soil. The regulations also specify that manure should not be applied at levels that that would increase the soil salinity (after the manure is applied) by more than 1 dS/m from a soil depth of 0 cm to 15 cm.



Nutrient management plans

Nutrient management plans are not mandatory for every person who applies manure. Under AOPA, an approved nutrient management plan is required if a person wants to exceed the soil nitrate-nitrogen or salinity limits when applying manure. The NRCB can approve a nutrient management plan for manure application in excess of the limits if the NRCB is satisfied that implementing the nutrient management plan will not adversely affect the soil or the environment.

Manure handling plans

A person applying for a CFO permit can submit a manure handling plan to the NRCB for approval to reduce or eliminate the need to meet the manure application and storage requirements under AOPA. The NRCB may approve a manure handling plan that provides an alternative to complying with the manure application and storage requirements. For example, an operation may submit a manure handling plan where an agreement is in place with others who will be accepting the manure from the operation. Manure production and transfer records must also be kept in these situations.

The following table is an example of the required information for land application.

Land Application Record* (Standards and Administration 28(5))

Owner		Legal Land Description		Field Name	Area
ABC Feeder		SW 6-18-22-W4		All	64 ha
Soil Test Records			Soil Texture		Soil Group or Farming Method
Date	NO ₃ -N (0-60 cm)	E.C. (0-15 cm) (dS/m)	0-15 cm	15-30 cm	
Oct. 22, 2002	55 kg/ha (0-60 cm)	1.1	Clay loam	Clay loam	Irrigated
May 4, 2006	80 kg/ha (0-60 cm)	1.1			
Manure Receiving Record			Type of Manure or Compost	Volume or Weight	Estimated Available Nitrogen
Date	Received From: Name + Address				
April 18-21, 2005	Self Box 99, Anytown, AB		Beef - Finisher	4,900 tonnes	2.6 kg/tonne
Sept. 14, 2005	Compost Company XYZ Box 32, Elsewhere, AB		Compost	2,900 tonnes	0.5 kg/tonne
Manure/Nutrient Application Record		Incorporation Record		Manure Application Rate	Available Nitrogen Application Rate
Date	Total Weight or Volume Applied	Date	Method		
May 5, 2003	Fertilizer	N/A	N/A	N/A	50 kg/ha
April 18-21, 2005	4,900 tonnes	Apr 19-23, 2005	Cultivated	76.5 tonnes/ha	199 kg/ha
Sept. 14, 2005	2,900 tonnes	Sept. 16, 2005	Cultivated	40 tonnes/ha	20 kg/ha

*Notes:

- Table information in **bold** lettering means it is required by AOPA. Information that is not bolded is not required by AOPA, but is included to add clarity, especially for operations with more than one type of livestock.
- Soil test information used to determine manure application rates for each field must not be older than three years except for soil texture, which is a one-time analysis.
- To convert kg/ha into lbs/ac, divide the kg/ha by 1.1 (e.g. 110 kg/ha / 1.1 = 100 lbs/ac).
- To convert tons into tonnes, divide the tons by 1.1 (e.g. 550 tons/ 1.1 = 500 tonnes).
- For average solid and liquid manure volumes produced by livestock, refer to the blank record keeping forms.

For copies of blank forms, go to www.agric.gov.ab.ca (Search for "AOPA Record Keeping") or call 1-800-292-5697.

For more information, contact:
(Dial 310-0000 to be connected toll-free)

Alberta Agriculture and Food
www.agric.gov.ab.ca
 Lethbridge: (403) 381-5885
 Red Deer: (403) 755-1475
 Morinville: (780) 939-1218
 Ag-Info Centre: 310 FARM (3276)
 Publications: 1-800-292-5697

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Environmental Standards for Alberta's Livestock Industry

Revised March 2007

Agdex 096-6

Manure Management Regulations for Cow/Calf Producers

“The purpose of AOPA is to ensure that the province's livestock industry can grow to meet the opportunities presented by local and world markets in an environmentally sustainable manner.”

Manure management requirements for all livestock operations in Alberta are outlined in the *Agricultural Operation Practices Act* (AOPA) and associated regulations. While this legislation focuses more on **confined feeding operations*** (e.g. feedlots, backgrounder operations, etc.), there are implications for cow/calf producers.

AOPA does not regulate livestock in a grazing situation. However, cow/calf operations are required to follow the regulations for manure collection, as well as manure application and storage setback distances from neighbours and common bodies of water.

For more information on AOPA, please refer to the contacts at the end of this document.

Terms the reader needs to know:

- A **common body of water*** refers to the bed and shores of rivers, streams, creeks (both permanent and intermittent) and canals as well as reservoirs, lakes, marshes and sloughs that are shared by or common to more than one landowner.
- **Manure*** includes livestock excreta, straw, other bedding material, litter, soil, and feed in the manure. Composted manure has the same requirements as manure.

* Terms used in this publication have been simplified to make it easier to read. Complete definitions are found in Section 1 of the legislation.

Key requirements

Managing manure is an integral part of protecting the environment (surface water and groundwater) and minimizing nuisance effects to neighbours. Cow/calf producers should be familiar with the requirements for the following:

- manure storage
- manure application
- wintering sites and corrals
- record keeping and soil testing



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Manure storage and application

The requirements may vary depending on the type of manure storage used. Short-term solid manure storage sites are generally used to store manure collected from locations where manure has accumulated before it can be spread on the land. **A short-term solid manure storage site can only be used for an accumulated total of seven months within a three-year period** regardless of the amount of manure stored. In other words, manure can be stored in the field for up to seven consecutive months at one location, and then the site cannot be used for the next two years and five months.

If 500 tonnes or more of manure are stored for more than seven months in a calendar year on the same spot, the site used must meet the requirements in the legislation for a manure storage facility and a permit must be obtained from the Natural Resources Conservation Board (NRCB) for the manure storage. Feedlot pens must also meet the requirements for manure storage facilities, not short-term storage sites. **Note:** The average cow/calf pair produces about three (2.95) tonnes of manure per year (depending on the amount and type of bedding used).

Short-term solid manure storage sites must be located at least:

- 150 metres (m) from a residence or occupied building that the producer does not own
- 100 m from a spring or water well
- 1 m above the water table
- 1 m above the 1-in-25 year maximum flood level

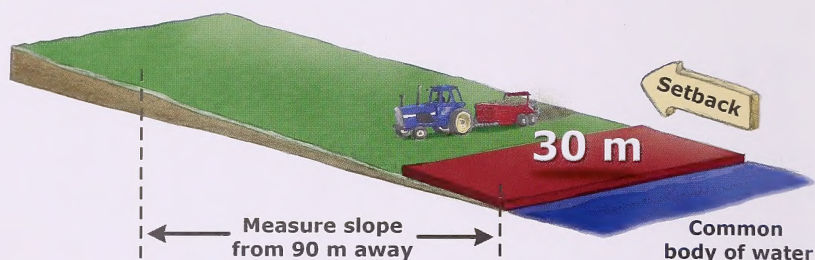
If the land slopes towards a common body of water, the setback distances in the following table and figures must be observed for short-term manure storage. The same setbacks are required for manure application on forage, direct-seeded crops and frozen or snow-covered land.

Setback distances for manure application and short-term storage

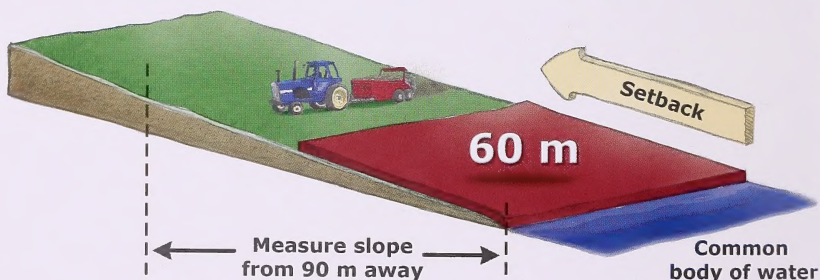
Average slope within 90 metres of a common body of water	Setback distance required from the common body of water
4% or less	30 m
Greater than 4% to less than 6%	60 m
6% or greater, but less than 12%	90 m
If the slope is 12% or greater, do not apply or store manure on the land. Once the slope is less than 12%, manure can be applied or stored.	

Manure application and short-term storage setbacks on land with less than 12% slope

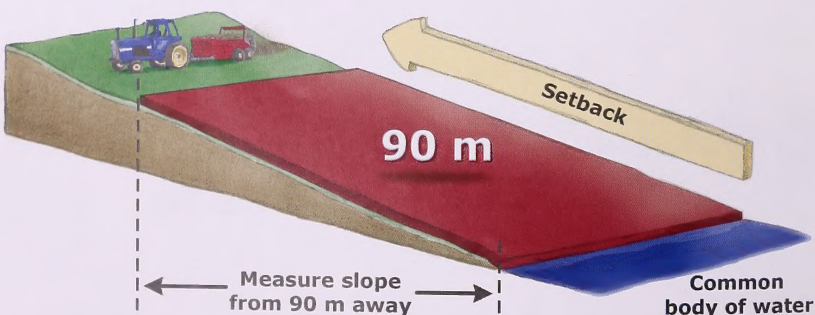
4% slope or less



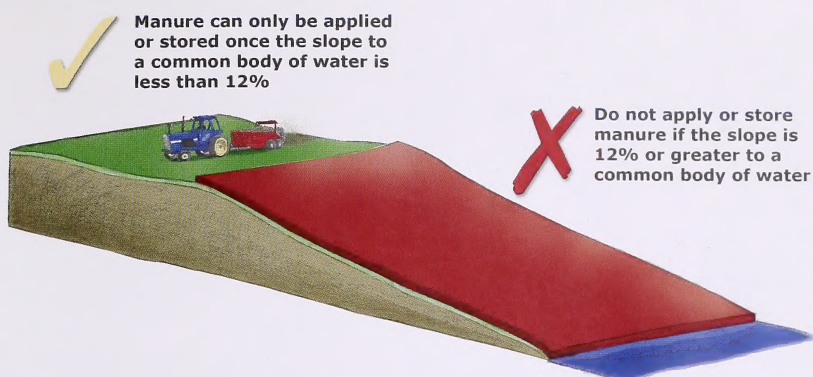
4 - 6% slope



6 - 12% slope



Manure application and short-term storage setbacks on land with 12% slope or greater



“Anyone applying manure to land must take into account the incorporation requirements, soil nitrogen and salinity limits, setback distances to water and runoff risks.”

Manure application and incorporation

Anyone applying manure to land must take into account the incorporation requirements, soil nitrogen and salinity limits, setback distances to water and runoff risks. Solid manure can only be applied to arable land and must be:

- applied at least 30 m from a water well or a common body of water (when applied to cultivated land)
- incorporated within 48 hours of application, except when applied on forage, direct-seeded crops, frozen or snow-covered land
- applied at least 150 m from a residence or occupied building that is not owned by the producer if the manure is not incorporated
- applied according to the setback distances in the table and figures above when not incorporating manure and if the land slopes towards a common body of water

Soil nitrogen and salinity limits

The regulation sets soil nitrate-nitrogen and salinity limits for manure application. These limits can only be exceeded if a producer has a nutrient management plan that has been approved by the NRCB.

The soil nitrate-nitrogen limits are set according to various farming methods, soil groups, soil textures and the depth to the water table. The following table specifies the nitrate-nitrogen levels that may not be exceeded in the top 60 cm of soil after manure application.

Nitrate-nitrogen limits in soil
(Standards and Administration Regulation, Schedule 3, Table 3)

Farming method	Soil group	Sandy (>45% sand and water table <4 m)	Sandy (>45% sand and water table >4 m)	Medium and fine textured soils
Dryland	Brown	80 kg/ha (75 lb/ac)	110 kg/ha (100 lb/ac)	140 kg/ha (125 lb/ac)
	Dark Brown	110 kg/ha (100 lb/ac)	140 kg/ha (125 lb/ac)	170 kg/ha (150 lb/ac)
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	Grey Wooded	110 kg/ha (100 lb/ac)	140 kg/ha (125 lb/ac)	170 kg/ha (150 lb/ac)
Irrigated	All groups	180 kg/ha (160 lb/ac)	225 kg/ha (200 lb/ac)	270 kg/ha (240 lb/ac)

Note: To convert kg/ha into lbs/ac, divide the kg/ha by 1.1 (e.g. 110 kg/ha / 1.1 = 100 lbs/ac)

To ensure the salts in manure do not affect plant growth, the regulations specify that manure must not be applied to soils that have an electrical conductivity (salinity) greater than 4 deciSiemen per metre (dS/m) from the top 0 cm to 15 cm of the soil. The regulations also specify that manure should not be applied at levels that would increase the soil salinity (after manure is applied) by more than 1 dS/m from a soil depth of 0 cm to 15 cm.

Nutrient management plans

Nutrient management plans are not mandatory for everyone who applies manure. Under AOPA, an approved nutrient management plan is required if a person wants to exceed the nitrate-nitrogen or salinity limits when applying manure. The NRCB can approve a nutrient management plan for applying manure in excess of the limits if the NRCB is satisfied that implementing the nutrient management plan will not adversely affect the soil or the environment.

Seasonal feeding and bedding sites (wintering sites) and livestock corrals

Seasonal feeding and bedding sites (wintering sites) and livestock corrals must be located at least 30 m away from a common body of water to reduce runoff risks.

If a corral or wintering site is closer than 30 m, one of two options must be implemented:

Option 1: An interceptor (e.g. berm or ditch) must be constructed between the site and the water to divert runoff from the site away from the water.

or

Option 2: Manure and bedding accumulated at the site must be moved to an appropriate manure storage facility or area before runoff occurs.



Record keeping and soil testing

Each person who handles 500 tonnes or more per year of manure must keep manure management records for five years and must conduct soil tests on the land where the manure is to be applied. The manure must also be applied according to the soil nitrogen and salinity limits in the legislation or an NRCB approved nutrient management plan. The soil test results for land on which manure is applied must not be older than three years, except for soil texture, which is a one-time analysis. The record keeping requirements do not apply to manure produced by livestock when they are grazing.

Records required:

- soil test results
- amount of manure produced or handled
- name and address of each person who receives or applies manure, as well as applicable dates
- land location where manure is applied
- application rates of manure and fertilizer

Further details and examples of record keeping forms are available from the contacts listed at the end of this publication.



Enforcement Process

An inspection of a livestock facility by the NRCB can be triggered if the NRCB receives a complaint. NRCB inspectors typically look at potential risks to the environment or problems related to manure handling, storage and application. If a problem is found, inspectors will work with operators to resolve the situation. When determining the appropriate enforcement response, inspectors will consider the significance of any non-compliance as well as the risk to the environment and the operator's willingness to address the issue voluntarily.

For more information, contact:
(Dial 310-0000 to be connected toll-free)

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